

# Getting Started with ITOS

---

ITOS User's Manual

\$Date: 2006/03/21 16:07:23 \$

---

Copyright 1999-2006, United States Government as represented by the Administrator of the National Aeronautics and Space Administration. No copyright is claimed in the United States under Title 17, U.S. Code.

This software and documentation are controlled exports and may only be released to U.S. Citizens and appropriate Permanent Residents in the United States. If you have any questions with respect to this constraint contact the GSFC center export administrator, <Thomas.R.Weisz@nasa.gov>.

This product contains software from the Integrated Test and Operations System (ITOS), a satellite ground data system developed at the Goddard Space Flight Center in Greenbelt MD. See <<http://itos.gsfc.nasa.gov>> or e-mail <itos@itos.gsfc.nasa.gov> for additional information.

You may use this software for any purpose provided you agree to the following terms and conditions:

1. Redistributions of source code must retain the above copyright notice and this list of conditions.
2. Redistributions in binary form must reproduce the above copyright notice and this list of conditions in the documentation and/or other materials provided with the distribution.
3. All advertising materials mentioning features or use of this software must display the following acknowledgement:

This product contains software from the Integrated Test and Operations System (ITOS), a satellite ground data system developed at the Goddard Space Flight Center in Greenbelt MD.

This software is provided "as is" without any warranty of any kind, either express, implied, or statutory, including, but not limited to, any warranty that the software will conform to specification, any implied warranties of merchantability, fitness for a particular purpose, and freedom from infringement and any warranty that the documentation will conform to their program or will be error free.

In no event shall NASA be liable for any damages, including, but not limited to, direct, indirect, special or consequential damages, arising out of, resulting from, or in any way connected with this software, whether or not based upon warranty, contract, tort, or otherwise, whether or not injury was sustained by persons or property or otherwise, and whether or not loss was sustained from or arose out of the results of, or use of, their software or services provided hereunder.

# Getting Started with ITOS

This document describes how to install and run ITOS.

- Installing ITOS.
- Running ITOS.
  - The group directory
  - The output directory
  - Your Environment
  - The database
  - The itosrc file
  - The ctrlsource.dat file
  - Running ITOS
- Appendices
  - Operating System Requirements
    - Packages needed to run ITOS.
    - Packages needed for ITOS development.
  - Managing the odb directory
  - itos\_dir/bin/itosrc
  - A sample mission's group directory

# 1 Installing ITOS

Although ITOS can be installed in any directory, we recommend creating a pseudo-user directory named ‘itos’ and installing ITOS in ‘~itos’. Assuming your ITOS distribution was compiled for your operating system and computer type, all you have to do is un-tar the ITOS distribution and any patches for the distribution in this directory. Note that patches must be unpacked after the base distribution and must be applied in numerical order, and that no patch can be skipped.

In the following discussion we’ll refer to the directory where ITOS is installed as *itos\_dir*.

If your ITOS distribution was for some other architecture or operating system (or if you just like doing things the hard way), here’s how to recompile ITOS:

1. Clean up the old stuff. Delete (`rm -rf`) the ‘bin’, ‘classes’, ‘dbx’, ‘htdocs’, ‘lib’, ‘man’, ‘pages’, ‘procs’, ‘tcvol2’, and ‘Xdefaults’ directories. Do not delete the ‘src’ directory!
2. Change directory into the ‘src’ (`cd src`) directory and run the command ‘`gmake clean`’.
3. Remove ‘config.cache’ and ‘Make.common’ (`rm config.cache Make.common`)
4. Make ITOS by running the command `gmake install`.

Once everything is properly built and installed, *itos\_dir* will contain the following files and subdirectories:

- ‘*itos\_dir/Version*’ – indicates the version of the ITOS software. Applications can read ‘Version’ to see which version is being run.
- ‘*itos\_dir/Xdefaults/*’ – the application defaults used by X go in this directory.
- ‘*itos\_dir/bin/*’ – the ITOS programs are in this directory. The ‘bin’ directory must be in your search path in order to run ITOS.
- ‘*itos\_dir/classes/*’ – Java class files.
- ‘*itos\_dir/dbx/*’ – the database exchange records that describe global mnemonics and command headers are in this directory.
- ‘*itos\_dir/htdocs/*’ – the ITOS documentation is in this directory. We recommend symbolic links to this directory for WWW access. For example, the TRACE mission’s home directory’s ‘~trace/public\_html/ITOS’ is a symbolic link to ‘*itos\_dir/htdocs*’.
- ‘*itos\_dir/lib/*’ – the ITOS shared libraries are in this directory.
- ‘*itos\_dir/man/*’ – the ITOS man pages are in this directory. Note that these man pages are only of interest to software developers.
- ‘*itos\_dir/pages/*’ – the ITOS provided display pages are in this directory.
- ‘*itos\_dir/procs/*’ – the ITOS provided procs are in this directory.
- ‘*itos\_dir/src/*’ – the ITOS source code and compiled objects.

## 2 Running ITOS

There's still a bit more setup you'll need to do before you can run ITOS.

### 2.1 The group directory

Each mission typically uses one group directory; this is where the mission's ITOS configuration files, database, page definitions, stol procedures, etc. reside. We call it the 'group directory' rather than 'mission directory' to allow the possibility that a mission might have multiple groups of users who don't share the same itos configuration.

Any directory can be the group directory, but we recommend creating a pseudo-user (using the mission's name) and using that user's home directory.

In the following discussion we'll refer to the group directory as *GROUPDIR*.

### 2.2 The output directory

In most cases this is just the group directory itself or a subdirectory under the group directory, i.e. '*GROUPDIR/outputs*'.

However, there are occasions when you'll want the output directory to be in some other place entirely. Generally, this occurs in a cluster when *GROUPDIR* is NFS mounted: if two machines sharing the same NFS mounted output directory run ITOS at the same time, they might clobber one another's output files. More important, ITOS uses the mmap() system call on some of the files in the output directory (specifically the archives), and mmap() isn't reliable on an NFS-mounted file system. Also, under Linux, you can't create FIFOs on NFS-mounted file systems.

In the following discussion we'll refer to the output directory as *OUTPUTDIR*.

Wherever you place *OUTPUTDIR*, it usually needs to have several subdirectories: 'archive', 'dumps', 'fifos', 'logs', 'pktdumps', 'prints', 'reports', 'snaps', and 'hotkey'. Each of these can be independently set, though. Generally we recommend creating *OUTPUTDIR* in '/export' or some other local drive with plenty of space and then put a symbolic link in your '*GROUPDIR/outputs*'. This way each machine's outputs are local to that machine only.

**NOTE** that ITOS will not run properly unless it can create an event FIFO, which is named by *ITOS\_EVTFIFO*. This variable defaults to '*OUTPUTDIR/fifos/event\_fifo*'. Be sure that the directories leading to the event fifo exist and are writable!

**NOTE** also that, under Linux, the 'fifos' directory must **not** be on an NFS-mounted file system. If it is, the FIFO will be created as a regular file.

### 2.3 Your environment

A few things can be set in your environment before you can run ITOS. You cannot set these in any '*itosrc*' file, because they are used in the '*itos*' script before the '*itosrc*' files are read.

**PATH**      Most important, *itos\_dir/bin* must be in your path.

**ITOS\_GROUPDIR**

**ITOS\_GROUPDIR** identifies the location of the group directory. This is the root directory for shared mission data, which usually includes the database, display definitions, STOL procedures, and command loads.

If **ITOS\_GROUPDIR** is not defined it is set to ‘**~ITOS\_GROUP**’, as explained below. If **ITOS\_GROUP** is not defined then **ITOS\_GROUPDIR** is set to the current working directory.

**ITOS\_GROUP**

**ITOS\_GROUP** identifies the user who’s home directory is the group directory. If **ITOS\_GROUPDIR** is unset, then it is set to the home directory of user **\$ITOS\_GROUP** (otherwise expressed as ‘**~\$ITOS\_GROUP**’). This variable is used only to create **ITOS\_GROUPDIR**; if **ITOS\_GROUPDIR** is set then **ITOS\_GROUP** is ignored.

**ITOS\_OUTPUTDIR**

**ITOS\_OUTPUTDIR** names the root ITOS output directory. The default names of most application-specific output directories are set relative to **ITOS\_OUTPUTDIR**. The application-specific output directories include those for sequential prints, page snaps, telemetry archive, command dumps, event logs, and etc.

If **ITOS\_OUTPUTDIR** isn’t defined but **ITOS\_GROUP** is, then ‘**/usr/tcw.\$ITOS\_GROUP**’<sup>1</sup> will be used for the output directory. If neither **ITOS\_OUTPUTDIR** nor **ITOS\_GROUP** are set, then the current working directory is used as the output directory.

See Section 2.2 [output directory], page 3.

No other variables whose names begin with ‘**ITOS\_**’ should be in your environment. Any that are will be overridden by the ‘**itosrc**’ files. (We really should fix that!)

## 2.4 The database

To run the ITOS you’ll need an *operational database*, which is the set of telemetry and command definitions ITOS needs to process telemetry and send commands. ITOS expects the operational database to be in the ‘**\$ITOS\_DBDIR**’ directory, which defaults to ‘**\$ITOS\_GROUPDIR/odb**’. But to allow multiple computer architectures to share the same **\$ITOS\_DBDIR**, put it in the ‘**\$ITOS\_DBDIR/\$ARCH**’ directory, where **ARCH** identifies the architecture and operating system ITOS is currently running on. **ARCH** is derived from ‘**uname -m**’ and ‘**uname -s**’; the following shell scripts demonstrates the derivation:

```
#!/bin/sh
case `uname -m` in
    sun4*) ARCH = "sparc_`uname -s`"
            ;;
    i86pc*) ARCH = "i386_`uname -s`"
            ;;
    *)      ARCH = "`uname -m`_`uname -s`"
```

---

<sup>1</sup> the name ‘**/usr/tcw.\$ITOS\_GROUP**’ is an artifact from the first installation of the system that became ITOS

```
;;
esac
```

For example, if ITOS is running on a i386 system running Solaris, *ARCH* is *i386\_SunOS*.

See Appendix B [odb directory], page 9 for recommendations on how to manage the '*ITOS\_DBDIR*' directory.

Now, to actually create an operational database, run this command:

```
itosrun dbxodb -mission swift -version 1.0 \
    -odbdirectory $ITOS_DBDIR/$ARCH \
    $ITOS_DIR/dbx/*.dbx your.files.here
```

The "itosrun" command is a script that sets up the ITOS environment before executing the given command, which is "dbxodb" – the database builder – in this case. This creates a database containing only the information required by ITOS to run, but contains no mission-specific data. **To add your mission database, add the list of your '.dbx' files to the end of the command given above.**

See the Database Exchange Records document for information on building a mission database and running dbxodb.

## 2.5 Other inputs

To do anything very interesting with ITOS, you need some things in addition to the operational database, including STOL procedures and display definitions. Display definitions define telemetry pages, plots, sequential prints, and configuration monitors.

We recommend putting STOL procedures in a tree under the '*GROUPDIR/procs*' directory, and display definitions in a tree under the '*GROUPDIR/pages*' directory.

## 2.6 The itosrc file

The primary ITOS configuration files are '*ITOS\_DIR/bin/itosrc*', '*\$ITOS\_GROUPDIR/itosrc*', and '*~/.itosrc*'.

The idea is that '*ITOS\_DIR/bin/itosrc*' contains the 'fallback' (or default) settings for ITOS variables. ITOS users never modify '*itos\_dir/bin/itosrc*'. Instead, mission specific overrides go in '*\$ITOS\_GROUPDIR/itosrc*'. The rarely used '*~/.itosrc*' allows individual users to further customize ITOS settings.

### 2.6.1 \$ITOS\_GROUPDIR/itosrc

'*\$ITOS\_GROUPDIR/itosrc*' is typically fairly small, something like:

```
setenv ITOS_MISSION sample
setenv ITOS_SPACECRAFTID 0x0537

setenv ITOS_START_PROC startup
setenv ITOS_BASEPG_1 power1
setenv ITOS_BASEPG_2 therm1
```

```
setenv ITOS_CMD_HOST fe9903
# other command subsystem configuration settings...
See Appendix C [fallback itosrc], page 11.
```

## 2.7 The ctrlsource.dat file

- What is ctrlsource.dat and where does it live?
- What is in the source configuration file?

## 2.8 Running ITOS

Simply change directory to *GROUPDIR* and run the command *itos*. *itos* optional arguments are:

- c Start with commands disabled.
- d Start with displays disabled.
- t Start with telemetry disabled.
- e Start without event forwarder.
- g Start without GUI Stol (GSTOL) window.
- m Start without loading database.
- y Start with yydebug enabled. (Stol debugging).

You should get a whole bunch of messages (see below) and ITOS should start.

```
*NOTE* looking for ODB in './odb/' instead of './odb/i386_SunOS/'
... setting GBL_DBVERS to 0.0
... setting GBL_MISSION to "wire"
... setting GBL_DBHOME to "./odb"
... Initializing the tags structure ...
... mv_odb completed normally.
itos_load_env: GBL_CMD_HOST := (C_STRING) "unset"
itos_load_env: GBL_PAGEPATH := (C_STRING) "/home/itos/pages:./pages"
itos_load_env: GBL_PROCPATH := (C_STRING) "/home/itos/procs:./procs"
...
```

# Appendix A Operating System Requirements

Before you can even install ITOS, your operating system must be configured. ITOS runs on Unix. ITOS is known to run on:

- PC systems running FreeBSD 3.4 (see section “Overview” in *Installing FreeBSD 3.4 for ITOS*, and <http://www.freebsd.org/>)
- PC systems running RedHat Linux 7.2 (see section “Overview” in *Installing RedHat Linux 7.2 for ITOS*, <http://www.linux.org> and <http://www.redhat.com/>)
- PC systems running Solaris 2.6 (see <http://www.sun.com/>)
- Sparc workstations running Solaris 2.6
- Sparc workstations running Solaris 7 (See section “Overview” in *Installing Solaris 7 on Sparc for ITOS.*)

Any current processor is fast enough to run ITOS; we recommend at least a Pentium 166 or a dual 40MHz Z55 SuperSparc. The computer should have at least 64MB RAM and at least 2GB hard disk. Desktop systems should have a 17" or larger monitor and 1152x900 or higher display resolution; laptop systems should have at least 1024x768 display resolution.

Several packages are required to compile and/or run ITOS:

## A.1 Packages needed to run ITOS

- apache WWW server. Needed to serve the ITOS documentation, your mission’s database description, and the ITOS Java display pages. See <http://www.apache.org/httpd.html>.
- jdk, the Java Development Kit. See <http://java.sun.com/>. ITOS release 6-14 requires jdk1.1.8 or newer version of Java 1.1 and the java bin directory must be in the PATH environment variable when ITOS is run or built.
- Motif 2. Solaris 2.6 and earlier do not include a suitable version of Motif; the Motif that comes with Solaris 7 and 8 works with ITOS. For open source operating systems, use OpenMotif, available from <http://www.opengroup.org/openmotif/>.
- netscape. See <http://www.netscape.com/>
- perl 5. See <http://www.perl.org>, <http://www.perl.com>, and <http://www.cpan.org>/
- libnet. libnet is a collection of Perl modules. Needed to run the autoftp script. The latest version of libnet can be found at <http://www.perl.org/CPAN/>

## A.2 Packages needed for ITOS development

- GNU autoconf. See <http://www.gnu.org/>
- GNU bison, GNU’s alternative to YACC. Normal YACC won’t work since it’s internal tables aren’t big enough to compile stol.
- GNU flex.
- GNU make. The ITOS Makefiles only work with GNU make. We recommend installing this so it can be invoked via the command `gmake`.

- GNU gcc 2.8.1 or higher. See <http://egcs.cygnus.com/>.
- GNU libc++ 2.8.1 or higher.
- TeX. See <http://www.ctan.org/>.
- texi2www. See <ftp://sunland.gsfc.nasa.gov/pub/tarfiles/texi2www.tgz>.
- JLex. Is a lexical analyzer used by java sx. It should reside in directory /usr/local/JLex. See <http://www.cs.princeton.edu/fac/appel/modern/java/JLex/>.
- ImageMagick, which includes the command convert which we use to convert ‘.jpg’ images to ‘.eps’ for documentation. See <http://www.imagemagick.org/>.
- XRT graph for Motif (optional). ‘src/dsp/plot’ is not compiled unless this exists and is installed in ‘/opt/xrt’ exists. XRT graph is available from the KL Group; see <http://www.klg.com/>. (Requiring it to be installed in ‘/opt/xrt’ is a configuration bug).
- JClass charts (optional). Also available from the KL Group at <http://www.klg.com/>.

## Appendix B Managing the odb directory

The ODB directory ‘\$ITOS\_DBDIR’ contains groups of Operational Database files that are grouped by mission name and version number. A typical directory would look like:

```
-rw-rw-r-- 1 xxx devel          0 Jun  1 11:26 wire7.2-t_cmdfldi.dscr.dir
-rw-rw-r-- 1 xxx devel          0 Jun  1 11:26 wire7.2-t_cmdfldi.dscr.pag
-rw-rw-r-- 1 xxx devel          0 Jun  1 11:26 wire7.2-t_coefi.dscr.dir
-rw-rw-r-- 1 xxx devel          0 Jun  1 11:26 wire7.2-t_coefi.dscr.pag
-rw-rw-r-- 1 xxx devel          0 Jun  1 11:26 wire7.2-t_dscdvali.dscr.dir
-rw-rw-r-- 1 xxx devel          0 Jun  1 11:26 wire7.2-t_dscdvali.dscr.pag
-rw-rw-r-- 1 xxx devel          0 Jun  1 11:26 wire7.2-t_limitsi.dscr.dir
-rw-rw-r-- 1 xxx devel          0 Jun  1 11:26 wire7.2-t_limitsi.dscr.pag
-rw-rw-r-- 1 xxx devel          0 Jun  1 11:26 wire7.2-t_mnemi.dscr.dir
-rw-rw-r-- 1 xxx devel          0 Jun  1 11:26 wire7.2-t_mnemi.dscr.pag
-rw-rw-r-- 1 xxx devel          0 Jun  1 11:26 wire7.2-t_packmni.dscr.dir
-rw-rw-r-- 1 xxx devel          0 Jun  1 11:26 wire7.2-t_packmni.dscr.pag
-rw-rw-r-- 1 xxx devel          0 Jun  1 11:26 wire7.2-t_selecti.dscr.dir
-rw-rw-r-- 1 xxx devel          0 Jun  1 11:26 wire7.2-t_selecti.dscr.pag
-rw-rw-r-- 1 xxx devel          4096 Jun  1 11:26 wire7.2-t_subsysi.dscr.dir
-rw-rw-r-- 1 xxx devel          4096 Jul 13 11:58 wire7.2-t_subsysi.dscr.pag
-rw-rw-r-- 1 xxx devel          4285976 Jul 13 11:59 wire7.2.odb
-rw-rw-r-- 1 xxx devel          53608 Jul 13 11:59 wire7.2.subsys
-rw-rw-r-- 1 xxx devel          363452 Jul 13 11:58 wire7.2.tags
-rw-rw-r-- 1 xxx devel          4012880 Jul 13 11:59 wire7.2_cmd.odb
-rw-rw-r-- 1 xxx devel          614400 Jul 13 11:58 wire7.2_simbuf.odb
-rw-rw-r-- 1 xxx devel          24088 Jul 13 11:59 wire7.2avlcmdmne
-rw-rw-r-- 1 xxx devel          120098 Jul 13 11:59 wire7.2avlmmem
-rw-rw-r-- 1 xxx devel          120098 Jul 13 11:59 wire7.2avlmmemid
-rw-rw-r-- 1 xxx devel          3688 Jul 13 11:59 wire7.2avlpackid
-rw-rw-r-- 1 xxx devel          0 Sep 20 14:58 wire7.3-t_cmdfldi.dscr.dir
-rw-rw-r-- 1 xxx devel          0 Sep 20 14:58 wire7.3-t_cmdfldi.dscr.pag
-rw-rw-r-- 1 xxx devel          0 Sep 20 14:58 wire7.3-t_coefi.dscr.dir
-rw-rw-r-- 1 xxx devel          0 Sep 20 14:58 wire7.3-t_coefi.dscr.pag
-rw-rw-r-- 1 xxx devel          0 Sep 20 14:58 wire7.3-t_dscdvali.dscr.dir
-rw-rw-r-- 1 xxx devel          0 Sep 20 14:58 wire7.3-t_dscdvali.dscr.pag
-rw-rw-r-- 1 xxx devel          0 Sep 20 14:58 wire7.3-t_limitsi.dscr.dir
-rw-rw-r-- 1 xxx devel          0 Sep 20 14:58 wire7.3-t_limitsi.dscr.pag
-rw-rw-r-- 1 xxx devel          0 Sep 20 14:58 wire7.3-t_mnemi.dscr.dir
-rw-rw-r-- 1 xxx devel          0 Sep 20 14:58 wire7.3-t_mnemi.dscr.pag
-rw-rw-r-- 1 xxx devel          0 Sep 20 14:58 wire7.3-t_packmni.dscr.dir
-rw-rw-r-- 1 xxx devel          0 Sep 20 14:58 wire7.3-t_packmni.dscr.pag
-rw-rw-r-- 1 xxx devel          0 Sep 20 14:58 wire7.3-t_selecti.dscr.dir
-rw-rw-r-- 1 xxx devel          0 Sep 20 14:58 wire7.3-t_selecti.dscr.pag
-rw-rw-r-- 1 xxx devel          4096 Sep 20 14:58 wire7.3-t_subsysi.dscr.dir
-rw-rw-r-- 1 xxx devel          4096 Sep 20 14:58 wire7.3-t_subsysi.dscr.pag
-rw-rw-r-- 1 xxx devel          4285976 Sep 20 14:59 wire7.3.odb
-rw-rw-r-- 1 xxx devel          53608 Sep 20 14:59 wire7.3.subsys
-rw-rw-r-- 1 xxx devel          363452 Sep 20 14:58 wire7.3.tags
```

```
-rw-rw-r-- 1 xxx devel 4012880 Sep 20 14:59 wire7.3_cmd.odb
-rw-rw-r-- 1 xxx devel 614400 Sep 20 14:58 wire7.3_simbuf.odb
-rw-rw-r-- 1 xxx devel 24088 Sep 20 14:58 wire7.3avlcmdmne
-rw-rw-r-- 1 xxx devel 120098 Sep 20 14:59 wire7.3avlmnem
-rw-rw-r-- 1 xxx devel 120098 Sep 20 14:58 wire7.3avlmnemid
-rw-rw-r-- 1 xxx devel 3688 Sep 20 14:58 wire7.3avlpckid
-rw-rw-r-- 1 xxx devel 9 Sep 20 14:58 wire_odb
```

File sizes will vary depending on the version of ITOS and the platform. It is up to the user to determine how many versions of the Operational Database will be kept. To delete a particular version one can use a UNIX `rm` command with a wild-card operator. In the example above, there are 2 mission ODB sets, "wire7.2" and "wire7.3". If you want to remove "wire7.2" you can simply type:

```
> rm wire7.2*
```

and all the "wire" mission "7.2" version would be removed.

When ITOS starts it copies the highest numbered version of the database to the '/usr/tmp' directory after removing any existing versions for the same mission. This keeps '/usr/tmp' from becoming too large and using up resources. The ITOS program modifies these files during execution leaving the originals untouched. Only the following files would be copied to '/usr/tmp' by ITOS using the above example:

```
wire7.3.odb
wire7.3.subsys
wire7.3.tags
wire7.3_cmd.odb
wire7.3_simbuf.odb
wire7.3avlcmdmne
wire7.3avlmnem
wire7.3avlmnemid
wire7.3avlpckid
wire_odb
```

## Appendix C itos\_dir/bin/itosrc

'itos\_dir/bin/itosrc' looks like:

```
#!/usr/bin/csh -f
# $Id: itosrc.csh,v 1.11 2006/03/21 16:08:34 bgoldman Exp $

# This file sets default values for ITOS environment variables.  This
# file is intended to be sourced (as in "source itosrc") from the
# 'itos' startup script _before_ sourcing the group and user itosrc
# scripts (./itosrc and ~/.itosrc, respectively).
#
# ITOS_DIR and ITOS_OUTPUTDIR are assumed to have been set
# before sourcing this file.

#####
#
# First, those environment variables that are usually overridden in the
# group itosrc.  Those initialized to "unset" MUST be overridden by the
# group or user itosrc.

# Location of database odbs
setenv ITOS_DBDIR      $ITOS_GROUPDIR/odb

# The name of the front-end or ground station
# computer to use for commanding.
setenv ITOS_CMD_HOST    unset

# The name of the spacecraft command checksum
# routine.
#setenv ITOS_CHKSMROUT

# The spacecraft ID.
setenv ITOS_SPACECRAFTID unset

# The name of the mission.
#setenv ITOS_MISISON unset

# The name of the display pages that are
# automatically displayed in slots 1 and 2
# when the ITOS software first comes up.
#setenv ITOS_BASEPG_1
#setenv ITOS_BASEPG_2

# The name of the page that gets snapped via
# the hotkey.
setenv ITOS_HOTKEY_PAGE status
```

\$Date: 2006/03/21 16:07:23 \$

```
# Database version to load into shared memory.  
# If unset, the latest version gets loaded!  
#setenv ITOS_DB_VERS  
  
# The colon-separated list of directories to  
# search for display pages.  
setenv ITOS_PAGEPATH $ITOS_GROUPDIR/pages:$ITOS_DIR/pages  
  
# The colon-separated list of directories to  
# search for stol procedures.  
setenv ITOS_PROCPATH $ITOS_GROUPDIR/procs:$ITOS_DIR/procs  
  
# The name of the stol procedure that's  
# automatically started when the ITOS software  
# first comes up. (If unset, no proc gets  
# automatically started).  
#setenv ITOS_START_PROC  
  
# The name of the host running the tlm controller.  
setenv ITOS_TMCTRL_HOST `uname -n'  
  
# The telemetry controller's well known port.  
setenv ITOS_TMCTRL_PORT 32000  
  
  
  
# Set up default configuration for GPIB  
# and RS-232 devices.  
#  
# The following 16 devices are for the  
# rectangular power supply used in TRACE ASE  
# and possibly the Battery Simulator  
# Primary Addr for all is 5  
#  
# Secondary Addr is 0...15  
# (which is entered as 0x60 thru 0x6F  
#  
setenv ITOS_DEV_TYPE_1_ saps1  
setenv ITOS_DEV_MODEL_1_ HP6654A  
setenv ITOS_DEV_PORT_1_ yourhost  
setenv ITOS_DEV_IF_1_ gpiib  
setenv ITOS_DEV_ADDR_1_ 0x6005  
  
setenv ITOS_DEV_TYPE_2_ saps2  
setenv ITOS_DEV_MODEL_2_ HP6654A  
setenv ITOS_DEV_PORT_2_ yourhost
```

```
setenv ITOS_DEV_IF_2_    gpib
setenv ITOS_DEV_ADDR_2_  0x6105

setenv ITOS_DEV_TYPE_3_  saps3
setenv ITOS_DEV_MODEL_3_ HP6654A
setenv ITOS_DEV_PORT_3_  yourhost
setenv ITOS_DEV_IF_3_    gpib
setenv ITOS_DEV_ADDR_3_  0x6205

setenv ITOS_DEV_TYPE_4_  saps4
setenv ITOS_DEV_MODEL_4_ HP6654A
setenv ITOS_DEV_PORT_4_  yourhost
setenv ITOS_DEV_IF_4_    gpib
setenv ITOS_DEV_ADDR_4_  0x6305

setenv ITOS_DEV_TYPE_5_  saps5
setenv ITOS_DEV_MODEL_5_ HP6654A
setenv ITOS_DEV_PORT_5_  yourhost
setenv ITOS_DEV_IF_5_    gpib
setenv ITOS_DEV_ADDR_5_  0x6405

setenv ITOS_DEV_TYPE_6_  saps6
setenv ITOS_DEV_MODEL_6_ HP6654A
setenv ITOS_DEV_PORT_6_  yourhost
setenv ITOS_DEV_IF_6_    gpib
setenv ITOS_DEV_ADDR_6_  0x6505

setenv ITOS_DEV_TYPE_7_  saps7
setenv ITOS_DEV_MODEL_7_ HP6654A
setenv ITOS_DEV_PORT_7_  yourhost
setenv ITOS_DEV_IF_7_    gpib
setenv ITOS_DEV_ADDR_7_  0x6605

setenv ITOS_DEV_TYPE_8_  saps8
setenv ITOS_DEV_MODEL_8_ HP6654A
setenv ITOS_DEV_PORT_8_  yourhost
setenv ITOS_DEV_IF_8_    gpib
setenv ITOS_DEV_ADDR_8_  0x6705

setenv ITOS_DEV_TYPE_9_  saps9
setenv ITOS_DEV_MODEL_9_ HP6654A
setenv ITOS_DEV_PORT_9_  yourhost
setenv ITOS_DEV_IF_9_    gpib
setenv ITOS_DEV_ADDR_9_  0x6805

setenv ITOS_DEV_TYPE_10_  saps10
setenv ITOS_DEV_MODEL_10_ HP6654A
setenv ITOS_DEV_PORT_10_  yourhost
```

```
setenv ITOS_DEV_IF_10_    gpib
setenv ITOS_DEV_ADDR_10_  0x6905

setenv ITOS_DEV_TYPE_11_  saps11
setenv ITOS_DEV_MODEL_11_ HP6654A
setenv ITOS_DEV_PORT_11_  yourhost
setenv ITOS_DEV_IF_11_    gpib
setenv ITOS_DEV_ADDR_11_  0x6A05

setenv ITOS_DEV_TYPE_12_  saps12
setenv ITOS_DEV_MODEL_12_ HP6654A
setenv ITOS_DEV_PORT_12_  yourhost
setenv ITOS_DEV_IF_12_    gpib
setenv ITOS_DEV_ADDR_12_  0x6B05

setenv ITOS_DEV_TYPE_13_  saps13
setenv ITOS_DEV_MODEL_13_ HP6654A
setenv ITOS_DEV_PORT_13_  yourhost
setenv ITOS_DEV_IF_13_    gpib
setenv ITOS_DEV_ADDR_13_  0x6C05

setenv ITOS_DEV_TYPE_14_  saps14
setenv ITOS_DEV_MODEL_14_ HP6654A
setenv ITOS_DEV_PORT_14_  yourhost
setenv ITOS_DEV_IF_14_    gpib
setenv ITOS_DEV_ADDR_14_  0x6D05

setenv ITOS_DEV_TYPE_15_  saps15
setenv ITOS_DEV_MODEL_15_ HP6654A
setenv ITOS_DEV_PORT_15_  yourhost
setenv ITOS_DEV_IF_15_    gpib
setenv ITOS_DEV_ADDR_15_  0x6E05

setenv ITOS_DEV_TYPE_16_  saps16
setenv ITOS_DEV_MODEL_16_ HP6654A
setenv ITOS_DEV_PORT_16_  yourhost
setenv ITOS_DEV_IF_16_    gpib
setenv ITOS_DEV_ADDR_16_  0x6F05

#
# Battery Simulator Electronic Load
#
# GPIB Addr = 7
#
setenv ITOS_DEV_TYPE_17_  bsload
setenv ITOS_DEV_MODEL_17_ HP6050
setenv ITOS_DEV_PORT_17_  yourhost
```

```

setenv ITOS_DEV_IF_17_      gpib
setenv ITOS_DEV_ADDR_17_    0x0007

# Battery Simulator Power Supply
#
# GPIB Addr = 6
#
setenv ITOS_DEV_TYPE_18_   bspower
setenv ITOS_DEV_MODEL_18_  HP6674A
setenv ITOS_DEV_PORT_18_   yourhost
setenv ITOS_DEV_IF_18_     gpib
setenv ITOS_DEV_ADDR_18_   0x0006

# Front-end bit synchronizer
setenv ITOS_DEV_TYPE_19_   bitsync
setenv ITOS_DEV_MODEL_19_  AYDIN335A
setenv ITOS_DEV_PORT_19_   yourhost
setenv ITOS_DEV_IF_19_     gpib
setenv ITOS_DEV_ADDR_19_   7

# Front-end digital recorder
setenv ITOS_DEV_TYPE_20_   recorder
setenv ITOS_DEV_MODEL_20_  metrumvlds
setenv ITOS_DEV_PORT_20_   /dev/ttyA2
setenv ITOS_DEV_IF_20_     rs232
setenv ITOS_DEV_BAUD_20_   2400
setenv ITOS_DEV_PARITY_20_ even
setenv ITOS_DEV_CLEN_20_   8
setenv ITOS_DEV_SBIT_20_   1

#
# Directory where on-line help html files are rooted. I.e., the
# table of contents to the on-line help is at
# '${ITOS_URLPREFIX}/Welcome.shtml'
#
#setenv ITOS_URLPREFIX      http://`hostname`/~${ITOS_MISSION}/ITOS/
setenv ITOS_URLPREFIX file:${ITOS_DIR}/htdocs/Welcome.html
setenv ITOS_URLBROWSER mozilla

#####
# Next, those environment variables that are machine specific (in
# other words, those variables where each machine on a network could
# have a different value). This is just a sample. These should be
# set in the group "itosrc" file.

# The name of the event printer. If this is
# unset, the event subsystem won't even
# attempt to use an event printer.

```

```
#if ('hostname' == "sunroof") setenv ITOS_EVTPRTR /dev/ttya

#####
# Finally, those environment variables that aren't usually overridden:

# Name of the default status page.
setenv ITOS_STATUSPG      status

          # Command Subsystem globals
#
setenv ITOS_IMGLOADDIR   $ITOS_GROUPDIR/loads
setenv ITOS_IMGDUMPDIR   $ITOS_OUTPUTDIR/dumps
setenv ITOS_IMGREPORTDIR $ITOS_OUTPUTDIR/reports
setenv ITOS_FOPFIFODIR   $ITOS_OUTPUTDIR/fifos
setenv ITOS_XPNDRXOR    1
setenv ITOS_XPNDRXORVAL 0xA55A
setenv ITOS_VIRTUALCHANNEL 0

# Directory where device configuration file,
# "Device.conf" is to be found.
setenv ITOS_DEVCFGDIR    $ITOS_DIR/bin

# The port the command subsystem uses to
# connect to the front-end or ground station.
setenv ITOS_CMD_PORT 6000

# The port that command transmit uses to
# connect internally to the FOP process
setenv ITOS_TRANSMIT_PORT 7500

# The base port that each FOPMUX uses to
# connect internally to the FOP process.
# There is one for each VC so the address
# range goes from ITOS_FOPMUX_PORT to
# ITOS_FOPMUX_PORT+63
setenv ITOS_FOPMUX_PORT 7600

# Initially, the FTCP isn't initialized
setenv ITOS_FTCP_STATUS 0

# Name of directory where special page
# executables are to be found.
setenv ITOS_DSPBIN      $ITOS_DIR/bin

# The name of the event FIFO. All ITOS
```

```
# processes will write event messages to this
# FIFO; the event logger process reads
# messages from this FIFO.
setenv ITOS_EVT FIFO $ITOS_OUTPUTDIR/fifos/event_fifo

# Event log directory.
setenv ITOS_EVTLDIR $ITOS_OUTPUTDIR/logs

# The size of the event queue used within
# the evtforward process.
#setenv ITOS_EVTFWD_QSIZE

# Stol input fifo.
setenv ITOS_STOLFIFO $ITOS_OUTPUTDIR/fifos/stol_fifo

# Directory in which X application defaults
# files are installed.
setenv XFILESEARCHPATH %D
setenv XFILESEARCHPATH ${XFILESEARCHPATH}:${ITOS_GROUPDIR}/%T/%N
setenv XFILESEARCHPATH ${XFILESEARCHPATH}:${ITOS_GROUPDIR}/Xdefaults/%N
setenv XFILESEARCHPATH ${XFILESEARCHPATH}:${ITOS_DIR}/%T/%N
setenv XFILESEARCHPATH ${XFILESEARCHPATH}:${ITOS_DIR}/Xdefaults/%N

# The following name directories where various output files are
# to be written.

# Packet dumps.
setenv ITOS_PKDPDIR $ITOS_OUTPUTDIR/pktdumps

# Snaps.
setenv ITOS_SNAPDIR $ITOS_OUTPUTDIR/snaps

# Hotkey reports.
setenv ITOS_HOTKEY_DIR $ITOS_OUTPUTDIR/hotkey

# Sequential prints.
setenv ITOS_SPRTDIR $ITOS_OUTPUTDIR/prints

# Archives.
setenv ITOS_TM_ARCHDIR $ITOS_OUTPUTDIR/archive

setenv ITOS_PTRSOCK unset

# Invocation server listen port.
setenv ITOS_INVOKED_PORT 33000
```

```
# Time in event message headers. Used by dsp_evtlog.  
# Should be "local" or "gmt".  
setenv ITOS_EVT_TIME local  
  
# The java server on the local machind listens  
# for commands on this port.  
setenv ITOS_JS_PORT 6070  
  
# Stol sends commands to the java server at  
# this address. The general form is  
# address:port, where port is optional.  
setenv ITOS_JS_ADDR localhost
```

## Appendix D A Sample Mission's Group Directory

The Triana mission's group directory looks like:

archive	db-html	fifos	itosrc	pages
ctrlsource.dat	dbx	gus	odb	